

That which is claimed is:

1. A process to produce 5-tert-butyl-metaxylene comprising:
 - a) adding a suitable alkylating agent to a mixture comprising active clay catalyst and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of at least 125°C and a pressure of at least 450 kPa at an alkylating agent addition rate effective to form 5-tert-butyl-metaxylene;
 - b) recovering a portion of the 5-tert-butyl-metaxylene and a portion of the metaxylene without removal of the active clay catalyst from the reactor;
 - c) separating the 5-tert-butyl-metaxylene from the metaxylene;
 - d) recycling at least a portion of the separated metaxylene to the reactor.
2. The process to produce 5-tert-butyl-metaxylene of Claim 1, wherein the active clay catalyst is an active dioctahedral smectite clay.
3. The process to produce 5-tert-butyl-metaxylene of Claim 1, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is greater than about 4:1.
4. The process to produce 5-tert-butyl-metaxylene of Claim 1, wherein the alkylating agent addition rate is less than about 0.35 g/min for every 100g of metaxylene in the mixture.
5. The process to produce 5-tert-butyl-metaxylene of Claim 1, wherein the alkylating agent is isobutylene.
6. A process to produce 5-tert-butyl-metaxylene comprising:
 - a) adding a suitable alkylating agent to a mixture comprising active clay catalyst and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of at least 125°C and a pressure of at least 450 kPa at an alkylating agent addition rate effective to form 5-tert-butyl-metaxylene;
 - b) recovering a portion of the 5-tert-butyl-metaxylene, a portion of the metaxylene, and a portion of the active clay catalyst from the reactor;

- c) separating the 5-tert-butyl-metaxylene from the recovered metaxylene and recovered active clay catalyst; and
- d) recycling at least a portion of the recovered active clay catalyst and at least a portion of the recovered metaxylene to the reactor.

5

- 7. The process to produce 5-tert-butyl-metaxylene of Claim 6, wherein the active clay catalyst is an active dioctahedral smectite clay.
- 8. The process to produce 5-tert-butyl-metaxylene of Claim 6, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is greater than about 4:1.
- 10
- 9. The process to produce 5-tert-butyl-metaxylene of Claim 6, wherein the alkylating agent addition rate is less than about 0.35 g/min for every 100g of metaxylene in the mixture.
- 15
- 10. The process to produce 5-tert-butyl-metaxylene of Claim 6, wherein the alkylating agent is isobutylene.
- 11. A process to produce 5-tert-butyl-metaxylene comprising:
 - a) adding a suitable alkylating agent to a mixture comprising active clay catalyst and an effective amount of metaxylene into a reactor at reaction conditions comprising a temperature of from about 131°C to about 156°C and a pressure of from about 515 kPa to about 620 kPa at an alkylating agent addition rate of from about 0.11 g/min to about 0.35 g/min for every 100g of metaxylene in the reactor;
 - b) recovering a portion of the 5-tert-butyl-metaxylene, a portion of the metaxylene, and a portion of the active clay catalyst from the reactor;
 - c) separating the 5-tert-butyl-metaxylene from the recovered metaxylene and recovered active clay catalyst; and
 - d) recycling at least a portion of the recovered active clay catalyst and at least a portion of the recovered metaxylene to the reactor.
- 20
- 25
- 30

12. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the active clay catalyst is an active dioctahedral smectite clay.
13. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the alkylating agent is isobutylene.
14. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the weight ratio of metaxylene to active clay catalyst in the mixture is about 9:1.
15. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the reactor pressure is about 585 psig.
16. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the alkylating agent addition rate is from about 0.13 g/min to about 0.29 g/min for every 100 g of metaxylene in the mixture.
17. The process to produce 5-tert-butyl-metaxylene of Claim 11, wherein the active clay catalyst is an active montmorillonite clay.

20